REMARKS

Claims 13-16 were rejected under 35 USC 101. Claim 13 is amended to overcome the rejection.

Claims 1-16 were rejected under 35 USC 102 as being anticipated by Beigi et al, US Patent 6,246,982. Applicants respectfully traverse.

With reference to independent claims 1, 5 and 9 the Examiner asserts that Beigi et al:

1. Teach a method of computing a distance measure between multiple mixture type probability distribution functions.

2. Teach that the method includes the steps of evaluating a joint distribution function.

3. Teach that the sum value of μ_l and γ_k over the range of $l=1$ to N and $k=1$ to K equate to a value of 1, is simply showing that the outcome of the sum of probability of events is always 1.

Rebuttal to assertion 1: Assuming that to be true, in itself that does not teach or suggest the collection of specific limitations of applicants' independent claims. At best, it teaches the preamble of the rejected claims.

Rebuttal to assertion 2: Again, assuming that to be true, in itself that does not teach or suggest the collection of limitations of applicants' independent claims. In fact, the rejected claims do not specify a step evaluating a joint distribution, but rather a step of evaluating a distance measure.

Rebuttal rebuttal to assertion 3: That is true, but that pertains to only one relationship (one limitation) of a **plurality** of inter-related relationship that the rejected claims specify. The other relationships are neither taught nor suggested by the reference, and the Examiner has not explicitly asserted that the reference does teach those limitations.

Since combining the above assertions leaves limitations of the dependent claims that are not described by Beigi et al, the conclusion must be reached that the rejected claims are NOT anticipated by Beigi et al.

In fairness to the reference, it needs to be mentioned that the reference does teach a an element distance measure that corresponds to $d(g_i, h_k)$ in applicants' relationships, and a combined distance measure (and perhaps that is what the Examiner

referred to when asserting that the reference teaches evaluating a joint distribution function). However, as argued in applicants' last Office Action response, the combined distance measure described in the reference is not the same as the combined distance measure specified in the rejected claims, which corresponds to

$$D_M(G,H) = \min_{w=[\omega_{ik}]} \sum_{i=1}^{N} \sum_{k=1}^{K} \omega_{ik} d(g_i, h_k) \ . \tag{1}$$

Even a cursory study reveals that the above equation (1) is a double sum of terms. Biege et al don't teach such a construct. Further, each of the terms is multiplied by a weighted factor ω_{ik}, that satisfies a specific condition; to wit:

$$\sum_{k=1}^{K} \omega_{ik} = \mu_i \text{ for any and all values of } i, \text{ and } \sum_{i=1}^{N} \omega_{ik} = \gamma_k \text{ for any and all values of } k.$$

Beigi et al also do not teach this.

In other words, whereas the Beigi et al combined distance collection only considers the distance from each member in one distribution to a closest member in the other distribution, and sums those distances, the combined distance in applicants' claims considered the distances from each member in one distribution to **all** of the elements in the other distribution and combines all of those distances. As demonstrated in the specification, the combined distance measure of applicants' claims satisfies the three properties of a real distance: non-negative, symmetric, and tri-angle inequality, if the element distance is a real distance. The Beigi's et al method may not satisfy this nice property.

The Examiner asserts (in the "Response to Arguments") that applicants asserted that Beigi et al reference fails to show Kullback Leibler Distance, and that such an assertion is not persuasive. The undersigned reviewed the previous Amendment and found no such assertion. Moreover, the Kullback Leibeler Distance disclosed in Beigi et al corresponds to the definition of the element distance term $d(g_i, h_k)$ in equation (1). In itself, it cannot suggest equation (1) itself.

It is respectfully submitted that although Beigi et al teach something about distance and joint distribution functions, they do not teach or suggest that *which applicants claim*; the specific equation (1). Thus, the different specific distance measure that is defined in the claims is another reason to hold that the rejected claims

are not anticipated by Beige et al. As an aside, all of the above arguments also hold for independent claim 13, which was not rejected under 35 USC 102.

Since all of the remaining claims depend on above-discussed independent claims that are deemed not anticipated by Beigi et al, it follows that the remaining, dependent claims, are also not anticipated by Beigi et al.
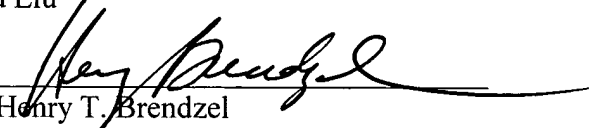
In light of the above amendments and remarks, applicants respectfully submit that all of the Examiner's rejections have been overcome. Reconsideration and allowance are, respectfully solicited.

Respectfully,
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